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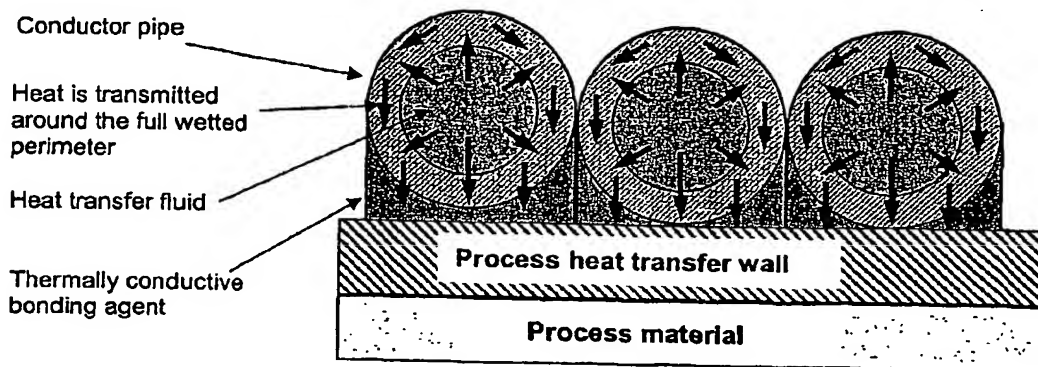
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(54) Title: **REDUCED VOLUME HEAT EXCHANGERS**



Section showing circular conductor pipes bonded to the heat transfer surface

(57) **Abstract:** A heat exchanger for delivery of heat transfer fluid to a process heat transfer surface is provided, the heat exchanger is in contact with a process fluid and the heat transfer surface comprises at least five heat transfer conduits each having a cross sectional area for the flow path of less than 2000 square millimetres wherein the linear velocity of the heat transfer fluid through the heat transfer conduits is from 0.5 to 20 m.s<sup>-1</sup> and adapted so that the temperature of the heat transfer fluid changes by at least 1 °C when they system is operating at design load, the exchanger enables more accurate temperature measurement and control in physical and chemical reactions. Also provided is a heat transfer system in which the heat transfer conduit for passage of the heat transfer fluid is attached to an expansion plate which is in contact with the heat transfer surface and enables independent movement of the heat transfer conduit and the heat transfer surface as their temperature change due to changes in temperature and/or pressure.

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